CORRESPONDENCE/MEMORANDUM

State of Wisconsin

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TO: Members of the Natural Resources Board

FROM: George E. Meyer – AD/5

SUBJECT: Background Memo to Grant the Amended Petition Submitted to the Department of Natural Resources to Adopt Administrative Rules to Reduce Mercury Emissions to the Air

BACKGROUND

On May 18, 2000, a petition was submitted to the Department of Natural Resources to adopt administrative rules requiring reductions in mercury emissions from the largest known sources of emissions. It was signed by representatives of numerous environmental organizations, conservation groups, sporting clubs and lake associations as well as several legislators. In September 2000, the Department received an amended petition that changed a requested rule provision from 90% reduction in mercury air emissions by the year 2015 to the same 90% reduction level by the year 2010. This amended petition was presented to the Board during the September 2000 Board meeting.

In January of 1999, the Department of Natural Resources issued a draft White Paper on a mercury reduction strategy. The purpose of the paper was to stimulate meaningful discussion and movement toward real reductions in mercury air emissions in Wisconsin and nationally. The four elements of the White Paper's proposed strategy were:

1. To establish a mercury cap, trading, banking and offset program that would achieve a 20% reduction in air emissions by 2005, a 35% reduction by 2010 and a 50% reduction by 2015. A check phase was called for in 2005, to reassess the 35% and 50% reduction goals, review new scientific and technology developments, and adjust the caps if appropriate.

2. To develop a statewide Total Maximum Daily Load for atmospheric deposition of mercury to Wisconsin water bodies.

3. To establish a Mercury Reduction Fund to carry out programs for reducing mercury from small sources, to develop and implement plans for the long-term storage or disposal of mercury, and to conduct research on mercury emissions, their transport and their effect on the environment.

4. To promote action at the regional and national levels to reduce the levels of mercury being transported into Wisconsin.

The Department convened a stakeholders group of representatives from government, industry and environmental organizations to discuss the White Paper. The Mercury Stakeholders Group met five times during 1999. The Group heard presentations from Department staff about Wisconsin mercury programs, from the US Environmental Protection Agency and the Minnesota Pollution Control Agency about other state, regional and national initiatives, and from stakeholder members about actions they have taken.

The Stakeholder Group did not arrive at a consensus position on a mercury reduction strategy. However, the Department incorporated a number of the concepts discussed by the stakeholders into its revised strategy, including the addition of a small source mercury reduction element and restrictions on emissions trading between the utility and non-utility sectors.

DESCRIPTION OF PETITION

The May 2000 petition requests that the Department of Natural Resources promulgate administrative rules that would accomplish the following:

1. Create a comprehensive mercury program including deposition monitoring, research, public education and information, technical assistance, long-term storage of mercury, small source reduction activities, solid waste activities, and program evaluation;
2. Establish a mercury control advisory council, with up to 12 members from environmental and sporting organizations, tribal governments, industry and public health officials;
3. Determine baseline emission levels by averaging emissions in 1997, 1998 and 1999;
4. Cap emissions from regulated and non-regulated sources at 1999 levels and require new sources of mercury emissions to offset new emissions by obtaining reductions from existing sources equal to 150% of the increased emissions;
5. Require a 90% reduction in emissions by the year 2015 from utility and government-owned boilers with more than 10 pounds of annual emissions; municipal and medical waste incinerators; chlor-alkali plants and other sources that the Department determines to be significant and reasonably regulated;
6. Set interim reduction requirements with at least a 25% reduction by the year 2006;
7. Require fines and other disincentives for non-compliance with the caps and reduction requirements;
8. Allow the Department to issue a variance for up to 2 years if the Department, in consultation with the Public Service Commission, determines that compliance is not technically feasible, would jeopardize electric reliability or cause unreasonable hardship.

The amended petition, filed in September 2000, changes the deadline by which mercury emitters must achieve the 90% reduction from the year 2015 to the year 2010.

RATIONALE FOR REDUCING MERCURY EMISSIONS TO THE AIR

Characteristics of Mercury

Mercury is persistent in the environment. It is an element that cannot be broken down or eliminated. It has unique properties that allow it to cycle in the environment between the atmosphere, land and water through a series of complex physical and chemical transformations.

Methylmercury, the most toxic form of mercury, accumulates very efficiently in the aquatic food chain. It builds up in the muscle tissue of fish and bioaccumulates as it moves up the food chain. Fish consumption dominates the pathway for human and wildlife exposure to methylmercury. Methylmercury is a highly toxic substance that has been associated with a number of adverse health effects, including brain development.

Fish Consumption Advisories

Since the 1970's, the Department has been monitoring mercury in the environment including sampling of mercury in the tissue of fish and other forms of wildlife such as loons. Within the borders of the State, there are nearly 15,000 lakes in addition to thousands of miles of rivers and streams. The Department has sampled over 1000 water bodies and has found elevated levels of mercury in fish in one out of every three water bodies tested. To warn people about the related risks associated with mercury in fish, the Department of Natural Resources in cooperation with the Department of Health and Family Studies issues

fish consumption advisories for certain contaminated water bodies. At the present time, 341 water bodies in the State are listed with mercury health advisories restricting the human consumption of fish. To date, 40 states, including Minnesota and Michigan, have fish advisories in place as a result of mercury contamination.

Elevated mercury levels in fish have restricted the pursuit of traditional food gathering practices of certain ethnic groups. Wisconsin Indian Tribes, including the Great Lakes Indian Fish and Wildlife Commission, have also conducted sampling for mercury levels in fish. Using somewhat stricter standards to protect tribal members because of their fish consumption habits, an additional 50 water bodies within the ceded territory have been listed by Indian Tribes as having a fish consumption advisory.

Fishing in Wisconsin is a form of recreation greatly enjoyed by many Wisconsin residents as well as visitors from out of state. Each year the Department sells approximately 1.25 million (0.25 million are non-resident) fishing licenses. The potential reduction of recreation and tourism activities as a result of fish consumption advisories could have economic consequences through reduced sales of food, lodging, gasoline, licenses and sporting equipment related to fishing as an activity.

Atmospheric Deposition of Mercury

Significant progress has been made in reducing the direct discharge of mercury to water bodies by industrial and municipal sources. However, atmospheric deposition continues to be a major pathway for mercury to enter water bodies and ultimately fish and wildlife.

Mercury exists in the atmosphere in three different forms that have different chemical properties. Depending on its form and weather conditions, mercury can be deposited locally or regionally or it can circulate in the atmosphere for up to a year and thus be transported thousands of miles from its source. The amount of mercury falling on any one Wisconsin water body is comprised of contributions from the global reservoir, regional sources, and local sources as well as from re-emissions of previously deposited mercury. Based on USEPA studies, the Department estimates that in-state sources contribute up to 50 percent of the deposition in Wisconsin's water bodies. The Department is cooperating with USEPA in a pilot project at Devil's Lake (near Baraboo, WI) to get a better handle on the percentage contribution to mercury deposition from local versus regional emission sources.

Wisconsin Mercury Emissions

Wisconsin sources emitted approximately 6,580 pounds of mercury to the atmosphere in 1995. The predominant source categories are a chlor-alkali plant (manufacture of chlorine and caustic soda), energy production, and waste combustion. These three source categories account for about 72% of annual mercury emissions in the state, with energy production accounting for about 50% of the emissions. Coal and oil contain naturally occurring mercury that is released to the air when these materials are combusted.

CURRENT REGULATIONS GOVERNING MERCURY EMISSIONS

State Regulations

In 1971, Chapter 272 was enacted by the legislature in response to high mercury levels found in fish in the Wisconsin River. The legislation addressed mercury discharges directly to the water; mercury emissions associated with solid waste disposal; and, the adoption of minimum standards for the emission of mercury compounds or metallic mercury into the air (now in s. 285.11(9), Wis. Stats.). In response to the legislation, the Department established emission standards for mercury and adopted the federal NESHAPS (National Emission Standards for Hazardous Air Pollutants) for mercury emissions from

chlor-alkali facilities and sludge incineration and drying plants (now in ch. NR 446, Wis. Adm. Code). At that time, the contribution of atmospheric deposition to elevated mercury levels in fish was not well understood.

In 1988, the Department promulgated ch. NR 445, Wis. Adm. Code, which regulates the emissions of hazardous air contaminants. Mercury is one of the pollutants regulated under ch. NR 445. However, emissions from fossil fuel combustion, including mercury emissions, are exempt from ch.NR 445. A recent re-analysis of the appropriateness of this exemption concluded that emissions from coal combustion were significantly below levels which could pose an inhalation risk to the public, and that the exemption from ch. NR 445 requirements continued to be appropriate.

Both ch. NR 445 and ch. NR 446 set emission standards for mercury to protect the public from unacceptable mercury exposure due to the direct inhalation of mercury. They do not address the bioaccumulative properties of mercury. Mercury levels in the ambient air are not hazardous to public health in Wisconsin. Rather, the public health risk arises from the mercury that is emitted to the atmosphere and deposited to water bodies where it bioaccumulates in fish that are subsequently eaten. Current state mercury emission standards do not protect public health from the bioaccumulation of mercury to water bodies

Federal Regulations

At the present time, there are no federal rules regulating mercury emissions from coal-fired electric utilities. In its 1998 Report to Congress, *Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units*, the US Environmental Protection Agency concluded that mercury from coal-fired utilities is the hazardous pollutant of greatest potential concern. USEPA is under a court ordered deadline of December 15, 2000, to make a regulatory determination as to whether or not regulations to control hazardous air pollutant emissions, including mercury, from utility units are appropriate and necessary. It is likely that USEPA will make a positive determination.

There are many uncertainties regarding federal regulations governing mercury, assuming that a positive determination were made. One uncertainty is the timing. The expected schedule would be for USEPA to propose regulations by the end of 2003 and issue final regulations by the end of 2004, with full implementation by 2007. However, there is no guarantee that this schedule would be met and some reason to believe that it may not be. For example, the Utility Report to Congress issued in 1998 was due to Congress three years after enactment of the Clean Air Act Amendments of 1990. Another uncertainty relates to the substance of the regulations. Would they require sufficient reductions in mercury emissions to address the problem? Would the approach they take provide for flexibility to meet the reduction requirements in a cost-effective way? Would they encourage utilities to take an integrated multi-pollutant reduction approach?

By adopting state regulations, Wisconsin would be in a very strong position to help shape national decision-making on mercury legislation and regulations, similar to the role Wisconsin played in the federal acid rain legislation. Wisconsin enacted one of the first and most comprehensive acid rain control laws in 1986, four years prior to the Clean Air Act Amendments of 1990. In addition to helping shape the federal program, the Wisconsin legislation provided environmental benefits to the state seven years prior to the realization of environmental benefits under the federal program. And, Wisconsin's electric utilities, by having "early" reductions, were able to take advantage of the economic opportunities offered by the federal sulfur dioxide allowance trading program.

LEGAL AUTHORITY TO PROCEED WITH RULE-MAKING TO REDUCE MERCURY EMISSIONS

Section 285.11(9), Wis. Stats., directs the Department to adopt minimum standards for the emission of mercury compounds or metallic mercury into the air. This statute gives the Department the authority to adopt administrative rules establishing mercury emission limits to protect public health and the environment from the atmospheric deposition of mercury.

Legislation was introduced in the 1999 Legislative Session calling for a 50% reduction in mercury emissions by 2015. The Department proposed several key changes to the legislation, including the establishment of an emission trading and banking program. Senate Substitute Amendment 1 included a cap and trade program. The Senate Environment Committee voted in support of the substitute amendment. A second substitute amendment, calling for a 90% reduction by the year 2015, was introduced. The bill was referred to the Joint Committee on Finance where it was defeated by a 7 to 9 vote. It was indicated at that time that the Department had statutory authority to adopt much of what was in the proposed legislation.

THE DEPARTMENT'S PROPOSED REGULATORY APPROACH

The Department's proposed mercury reduction strategy, as articulated in the White Paper, is an emissions cap and trading program. Under a mercury cap and trade program, total allowable emissions would be capped at a specified level, with each source being allocated its share of the total allowable emissions based on an adopted allocation scheme. The cap would be lowered every five years until the final target had been reached.

The Department favors a market-based cap and trading approach over the traditional regulatory approach because it provides sources with flexibility in how to achieve the emission reductions while ensuring that the desired environmental outcome is achieved. A cap and trade program gives sources the ability to select the least cost reduction approach. It is predicated on a difference in the cost of reduction for different sources. Sources with lower reduction costs could chose to reduce their emissions below the required levels and trade "excess" reductions to sources with higher costs. Sources with higher reduction costs could chose to purchase excess reductions in the amount needed to meet their cap, rather than making the reductions at their facility. The net result is that the total emission reductions needed to meet the cap are achieved at the least cost.

In addition to the cost benefits, a trading program provides sources with flexibility in terms of planning for and timing their reduction activities. This would facilitate the development of an integrated approach to reducing multiple air pollutants, including nitrogen oxides, sulfur dioxide, fine particulates, carbon dioxide, and other hazardous air pollutants in addition to mercury.

The Department also supports a strategy that would allow sources to meet their emission cap through activities that result in mercury emission reductions from "uncapped" sources. These include small source reduction projects (such as collecting mercury from dental offices and laboratories) and "beyond compliance" reductions from large sources such as the chlor-alkali plant or industrial boilers at paper mills. Small, scattered sources contribute about 14% and large "uncapped" sources contribute about 25% of the total mercury emissions in Wisconsin.

RECOMMENDATIONS

Given the above described background, the Department recommends that the Natural Resources Board grant the petition and direct staff to present proposed rules, with a request for public hearing authorization, at the Board's March 2001 meeting.

In developing the rules, the Department should include the following:

1. The percentage reductions and a phased schedule for achieving the reductions.
2. A methodology for determining baseline emissions levels.
3. An emissions trading and banking system.
4. A provision to allow for alternative compliance options, such as projects that achieve mercury emission reductions from sources not covered by the rules.
5. A provision that would allow the Department to grant variances, such as deadline extensions or alternative emission limits, if it determines that compliance with the reduction requirements is not technologically feasible, would jeopardize electric reliability or would cause unreasonable hardship as long as the variance would not result in undue harm to human health or the environment.
6. A provision that the Department submit a report to the Board by the end of 2007 that:
    a. Evaluates the mercury reduction requirements in light of electric reliability, scientific and technology developments, and federal regulatory activity, and recommends adjustments to the reduction requirements, if appropriate
    b. Assesses the impacts of emissions trading on localized water quality and recommends corrective actions if needed.

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